**Teaching Program for Doctoral Candidates of Chemical Engineering and Technology**

**(Discipline Code: 0817 Degree of Doctor of Engineering)**

**Ⅰ. Educational Objectives**

The discipline is aimed at fostering international students’ ability in keeping abreast of the advancements in chemical and physical processes in all types of processing industries (chemical industry in particular), in meeting the needs of modern chemical industry for top chemical engineering talents. The graduates are expected to possess the fundamental theories and systematic professional knowledge, the spirit of innovation and team work, and the ability to excel at development, education, and management in the modern chemical industries and some other related fields.

**Ⅱ. Research Fields**

1. Chemical Engineering

2. Chemical Technology

3. Biochemical Engineering

4. Applied Chemistry

5. Industrial Catalysis

6. Materials-oriented Chemical Engineering

7. Pharmaceutical and fine chemicals

**Ⅲ. Program Duration**

Full time PhD students are expected to complete their studies and earn their degrees in 3 to 5 years, and they will be disqualified from the program after 5 years.

**Ⅳ. Credits and Requirements**

Credit Requirement and Allocation for Doctoral Candidates of Chemical Engineering and Technology

|  |  |  |
| --- | --- | --- |
| Total Credits | ≥24 credits | |
| Course credits | ≥12 credits | Public compulsory courses: 6 credits, including Chinese Language (4 credits) and A Survey of China (2 credits);  Discipline basic courses≥ 4 credits  Professional electives≥2 credits |
| Research credits | ≥12credits | Dissertation proposal: 1 credit  Academic activities: 1 credit  Dissertation interim progress report and assessment: 1 credit  PhD dissertation: 9 credits |
| See the curriculum schedule for specific courses | | |

**Ⅴ. Pecific Requirements for Doctoral Candidates in Chemical Engineering and Technology**

1. Basic Requirements for Cultivation

The supervisor and doctoral guidance group are responsible for the training of PhD students. Supervisor and guidance group are responsible for drawing up the training project and guiding dissertation writing. Doctoral guidance group should cooperate with members from other relative departments. It is necessary for a PhD student to carry out scientific researches independently under the guidance of his/her supervisor and complete a qualified degree dissertation. During the study period, doctoral graduates should spend at least 2 years focusing on scientific research and preparing his/her dissertation. The supervisor is responsible for guiding his/her students to select a good topic and performing the research. He/she should also organize the students to attend academic activities such as international academic conferences.

2. PhD Dissertation Topic and Research Proposal

PhD dissertation proposal should be no less than 10,000 words and have at least 80 references, half of which must be published in the recent 5 years. A PhD student should choose a research topic for the PhD dissertation and spend no less than 2 years on the research and dissertation writing all under the guidance of his/her supervisor. Detailed regulations and requirements on PhD dissertation are documented in the "WUST Regulations on Topic Selection, Research Proposal and Composition of Postgraduate Theses and Dissertations". PhD dissertation research proposal writing and defense should be completed no later than the second academic year of the program.

3. Comprehensive qualifying exam and mid-term examination

After all courses are completed, in order to check if the students master the basic theory and in-depth specialized knowledge of the discipline, comprehensive qualifying examinations should be carried out. Generally, the examination will be arranged at the third semester which is chaired by examination committee consisting of 3 to 5 professors and associated professors majored in this or related discipline. Mid-term examination is carried out based on comprehensive examination. Detailed descriptions are specified in the "WUST Regulations on the Mid-term Examination for Graduate Students”.

4. Academic activities

Academic activities involve attending academic reports. Students are required to make no less than two seminar presentations during their study. The credit for attending academic activities is 1, which includes 0.25 credit for each specialist report delivery, 0.1 credit for each academic report and lecture attendance, and 0.5 credit for each national academic conference attendance. After academic activities, students should write an abstract about the activities which is no less than 250-500 words and fill out an academic activity registration form which takes effect only with their supervisors’ permission and signature. Credits can be achieved only after qualified examination and verification. If one fails to meet the requirements, s/he will be regarded as not finishing the program and will not be permitted to undertake dissertation defense.

5. Publication

To meet the degree requirements, a PhD student is required to have a certain number of academic publications related to the dissertation research. Detailed requirements are documented in "WUST Regulations on a PhD Student’s Publications of Research Works".

6. Pre-defense

The Pre-defense meeting serves as a rehearsal for the final defense presentation and is the opportune time to address any final edits, questions, or concerns leading up to the Final Defense. The candidate is responsible for preparing an electronic copy of the research and presentation materials for the defense. The presentation consists of a 25-35 minute oral introduction of the study with an emphasis on the findings and the conclusions. Once the Pre-defense manuscript has been approved by the committee and the program director and the examination results form has been signed by the committee and the program director, the final defense can be scheduled. The Pre-defense manuscript and examination results form must be fully approved at least 14 days prior to the final dissertation defense.

7. Final Defense Process

The implementation of dissertation defense should abide by the provisions agreed upon by the Degree Evaluation Committee of WUST. There are three possible results from the dissertation committee vote, namely, pass, re-examination or failure.

The evaluation of pass indicates that a majority of members of the dissertation committee conclude that the candidate meets or exceeds the requirements set forth in the dissertation proposal, however s/he may be required to make minor editorial modifications to the dissertation.

An evaluation of re-examination indicates that two or more members of the Committee found substantive problems in the work or the defense of the dissertation. The committee members will prepare a list of modifications or improvements required before a second dissertation defense is scheduled. The re-examination will be arranged in the same or subsequent semester unless the dissertation committee and the dean of the graduate school grant additional time to effect the necessary changes.

An evaluation of failure indicates that the majority of the dissertation committee judge the quality of the candidate’s dissertation and the defense of the dissertation to be below the standards expected of doctoral level scholarly performance. In this case, the candidate can petition the chair and program director for the opportunity for re-evaluation.

**Curriculum Schedule for Ph.D. Candidates in Chemical Engineering and Technology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category** | **Course nature** | **Course Number** | **Course name** | **Hour** | **Credit** | **Term** | **College providing the course** | **Note** |
| Degree  course | Common compulsory courses | 17BSA0601 | Chinese Language | 160 | 4 | 1 | School of Literature Law and Economics | Compulsory |
| 17BSA2101 | A Survey of China | 32 | 2 | 1 | International School |
| Discipline fundamental courses | 17BC22101 | Progress of Chemical Engineering and Technology | 32 | 2 | 1 | School of Chemistry and Chemical Engineering | Compulsory |
| 15BD22101 | Modern Analysis and Measurement Technology | 32 | 2 | 1 | School of Chemistry and Chemical Engineering | Compulsory |
| Elective course | Professional elective courses | 15BY22101 | Progress of Carbon Material Science | 32 | 2 | 2 | School of Chemistry and Chemical Engineering | Elective:  ≥2 credits |
| 15BY22102 | Progress of Modern Biotechnology | 32 | 2 | 2 | School of Chemistry and Chemical Engineering |
| 15BY22103 | Supramolecular Chemistry | 32 | 2 | 2 | School of Chemistry and Chemical Engineering |
| Research | | 15BYJ2201 | Dissertation proposal |  | 1 | 3 | School of Chemistry and Chemical Engineering | Compulsory |
| 15BYJ2205 | Academic activities ≥9 times |  | 1 | 1-6 |
| 15BYJ2203 | Mid-term progress report and assessment |  | 1 | 4 |
| 15BYJ2204 | Dissertation |  | 9 |  |

**Teaching Program for Master Degree Candidates in Chemical Engineering and Technology**

**(Discipline Code: 0817 Degree of Master of Engineering)**

**Ⅰ. Educational Objectives**

This program is to prepare international students with broad knowledge and an in-depth academic foundation in the field of chemical engineering and technology. After continual scholarly training and developing their intellectual capacity and , the students are expected to (1) be qualified for positions in such fields as engineering design, system analysis, process integration, operational management and academic research in chemical engineering, chemical technology, energy and environmental engineering, material science and engineering, pharmaceutical engineering and biochemical engineering; (2) have professional and ethical responsibility, international perspective, innovative spirit, practical competence and competitiveness.

**Ⅱ. Research Fields**

1. Chemical Engineering

2. Chemical Technology

3. Biochemical Engineering

4. Applied Chemistry

5. Industrial Catalysis

6. Material Chemical Engineering

7. Pharmaceutical and fine chemical

**Ⅲ. Program Duration**

The duration of the full-time program for academic master’s degree is 2-3 years.

**Ⅳ. redits and Requirements**

Credit Requirement and Allocation for Master Degree Candidates of Chemical Engineering and Technology

|  |  |  |
| --- | --- | --- |
| Total credits | ≥30 credits | |
| Course credits | ≥23 credits | Common compulsory courses are 6 credits, including Chinese Language(4 credits) and A Survey of China (2 credits);  Discipline basic courses ≥ 10 credits;  professional elective courses ≥7 credits |
| Research credits | ≥7 credits | Thesis proposal: 1 credit;  Academic activities: 1 credit;  Thesis interim progress report and assessment: 1 credit;  Thesis: 4 credits |
| See the curriculum schedule for specific courses | | |

**Ⅴ. Research and dissertation**

**1. Basic Requirements for Cultivation**

Cultivating overseas students in master’s program is based on the mentor responsibility system where the mentor is the first responsible party, or on an instructing team responsibility system with the mentor as the director. The instructing team, composed of 3-5 associate professors and professional teachers (including the mentor), should be nominated by the mentor and then approved by relevant schools with mentors playing a leading role in the overseas graduates’ cultivating according to the students’ research fields and research subjects. The instructing team should assist the mentor to instruct courses, research work and dissertation writing. During the cultivation, both theoretical study and scientific research should be combined. The program should: (1) emphasize the cultivation of the ability of carrying out independent and creative scientific work; (2) instruct students to learn, and to analyze and solve practical problems independently; (3) encourage them to participate in academic activities actively and support them in independent researches ; (4) assist them in selecting their research field for their thesis and exploring their research. For the students who are lack of experience and expertise and interdisciplinary knowledge, mentors and schools should create favorable environment for them to make up.

2. Thesis proposal

Candidate masters should: (1) be familiar with frontier of the research discipline through both literature search and reading and practical surveying; (2) respect the intellectual property and write a qualify literature review and complete a thesis proposal based on the review.

The thesis proposal should be no less than 5000 words and should have at least 40 references, half of which must be published in recent 5 years.

Students should report and defend their thesis publicly in a session arranged by their mentors. Only the students who pass the thesis proposal evaluation can start their research and thesis composition. Detailed regulations and requirements on master thesis proposal are documented in the "WUST Regulations on Topic Selection, Research Proposal and Composition of Postgraduate Theses and Dissertations". Master thesis research proposal writing and defense should be completed in no later than the second academic year of the program.

3. Academic activities

Students are required to attend academic reports of any kinds no less than 6 times during their study period. After attending academic activities, students should write an abstract about the activities in no less than 250-500 words and fill out an academic activities enrollment form which takes effect only with their supervisors’ permission and signature the document. Credits can be achieved only after qualified examination and verification. If one fails to meet the requirements, s/he will be regarded as not finishing the program and will not be permitted to undertake thesis defense.

4. Publication

To meet the degree requirements, a master student is required to have a certain number of academic publications related to their dissertation research. Detailed requirements are documented in "WUST regulations on a Postgraduate’s Publications of Their Research Work".

5. Thesis Defense

The implementation of dissertation defense should abide by the provisions agreed upon by the Degree Evaluation Committee of WUST. There are three possible results from the dissertation committee vote, namely, pass, re-examination or failure.

The evaluation of pass indicates that a majority of members of the dissertation committee conclude that the candidate meets or exceeds the requirements set forth in the dissertation proposal, however s/he may be required to make minor editorial modifications to the dissertation.

An evaluation of re-examination indicates that two or more members of the Committee found substantive problems in the work or the defense of the dissertation. The committee members will prepare a list of modifications or improvements required before a second dissertation defense is scheduled. The re-examination will be arranged in the same or subsequent semester unless the dissertation committee and the dean of the graduate school grant additional time to effect the necessary changes.

An evaluation of failure indicates that the majority of the dissertation committee judge the quality of the candidate’s dissertation and the defense of the dissertation to be below the standards expected of doctoral level scholarly performance. In this case, the candidate can petition the chair and program director for the opportunity for re-evaluation.

**Curriculum Schedule for Students in Master’s program in Chemical Engineering and Technology**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category** | **Course nature** | **Course Number** | **Course name** | **Hour** | **Credit** | **Term** | c**ollege providing the course** | **Note** |
| Degree  course | Common compulsory course | 17BSA0601 | Chinese Language | 160 | 4 | 1 | School of Literature Law and Economics | Compulsory |
| 17BSA2101 | A Survey of China | 32 | 2 | 1 | International School |
| Discipline fundamental course | 15SD22101 | The Principle of Transfer Processes | 32 | 2 | 1 | School of Chemistry and Chemical Engineering | Compulsory |
| 15SD22102 | Chemical Reaction Engineering | 40 | 2.5 | 1 | School of Chemistry and Chemical Engineering | Compulsory |
| 15SD22103 | Advanced Chemical Engineering Thermodynamics | 40 | 2.5 | 1 | School of Chemistry and Chemical Engineering | Compulsory |
| 15SD22104 | Chemical Process Analysis and Integration | 32 | 2 | 2 | School of Chemistry and Chemical Engineering | Compulsory |
| 15SY22101 | Advanced Separate Engineering | 32 | 2 | 2 | School of Chemistry and Chemical Engineering | Compulsory |
| Elective course | Professional elective course | 15SY22103 | Advanced Organic Chemistry | 32 | 2 | 2 | School of Chemistry and Chemical Engineering | Elective:  ≥7 credits |
| 15SY22109 | Modern Instrumental Analysis | 32 | 2 | 2 | School of Chemistry and Chemical Engineering |
| 15BY22103 | Supramolecular Chemistry | 32 | 2 | 2 | School of Chemistry and Chemical Engineering |
| 15SY22110 | Frontier of Biochemical Engineering | 32 | 2 | 2 | School of Chemistry and Chemical Engineering |
| 17BC22101 | Progress of Chemical Engineering and Technology | 32 | 2 | 1 | School of Chemistry and Chemical Engineering |
| Research | | 15SYJ2201 | Thesis proposal |  | 1 | 3 | School of Chemistry and Chemical Engineering | Compulsory |
| 15SYJ2205 | Academic activities ≥6 times |  | 1 | 1-6 |
| 15SYJ2203 | Mid-term progress report and assessment |  | 1 | 4 |
| 15SYJ2204 | Thesis |  | 4 |  |